FACT SHEET/STATEMENT OF BASIS
HYRUM WASTEWATER TREATMENT PLANT
RENEWAL PERMIT: DISCHARGE, BIOSOLIDS & STORM WATER
UPDES PERMIT NUMBER: UT0023205
UPDES BIOSOLIDS PERMIT NUMBER: UTL-023205
UPDES MULTI-SECTOR STORM WATER GENERAL PERMIT NUMBER: UTR000000
MAJOR MUNICIPAL

FACILITY CONTACTS

Person Name:	Kevin Maughan
Position:	Plant Superintendent
Person Name:	Kyle West
Position:	Plant Operator
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Position:	Plant Operator

Facility Name:	Hyrum City Wastewater Treatment Plant
Facility Address	1900 West 4400 South
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DESCRIPTION OF FACILITY

The Hyrum wastewater treatment plant is owned and operated by the City of Hyrum. Hyrum is in Cache County, about 7 miles south of Logan near the south end of Cache Valley. Hyrum City has a current population of about 7,200. The original wastewater facility, an oxidation ditch, was put into service in 1977. The next major upgrade was partly motivated by the requirements of a TMDL for Spring Creek. The TMDL for Spring Creek was completed in January of 2002. Spring Creek is a water body that the Hyrum wastewater treatment plant (WWTP) discharge flows to from a ditch. Phosphorus and dissolved oxygen are two of the pollutants of concern in the TMDL. Phosphorus removal was a major concern when Hyrum was considering its upgrade. Hyrum selected a Kubota membrane bioreactor system. DWQ gave Hyrum approval to proceed with construction of a membrane treatment plant on May 13, 2003. Hyrum built the membrane treatment plant for about $7.8 million dollars. DWQ provided financial assistance in the form of a loan and hardship grant of about $4.2 million. Startup and operation of the new membrane plant began in January of 2006.

The original plant (oxidation ditch) had a hydraulic capacity of about 1 MGD. The new membrane plant has a capacity of 2 MGD. The treatment process consists of a screening process, two parallel anoxic basins, an aerated channel, and three aeration basins. Return activated sludge is pumped back to the anoxic basins. The disinfection system consists of ultra violet light, before the wastewater is discharged. Biosolids are handled with a belt press and drying beds.

SUMMARY OF CHANGES FROM PREVIOUS PERMIT

There are no significant changes from the previous permit. One change, not considered to be significant, is that ammonia is calculated seasonally in this permit, where before it was one limit for the whole year.

DISCHARGE

DESCRIPTION OF DISCHARGE

The Hyrum City Wastewater Treatment Plant has been reporting self-monitoring results on Discharge Monitoring Reports on a monthly basis. A summary of the last 7 years of data is attached.

Outfall	Description of Discharge Point
001	The discharge is located at latitude 41°39'06" and longitude 111°52'50". The Hyrum Wastewater Treatment Plant (HWTP) discharges directly into an unnamed irrigation ditch from a 24-inch concrete pipe immediately north of the facility.

RECEIVING WATERS AND STREAM CLASSIFICATION

The receiving water is an unnamed irrigation ditch, which flows approximately three miles to Spring Creek, and from there to the Little Bear River.

The irrigation ditch is classified as Class 4. The Little Bear River and its tributaries from Cutler Reservoir to its headwaters are classified as 2B, 3A, 3D, and 4 according to Utah Administrative Code R317-2-12.7

Class 2B	-Protected for secondary contact recreation such as boating, wading, or similar uses.
Class 3A	-Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain.
Class 3D	-Protected for waterfowl, shore birds and other water oriented wildlife not included in Class 3A, 3B, or 3C, including the necessary aquatic organisms in their food chain.
Class 4	-Protected for agricultural uses including irrigation of crops and stock watering.

BASIS FOR EFFLUENT LIMITATIONS

Limitations on total suspended solids (TSS), biochemical oxygen demand (BOD_5), E coli, pH and percent removal for BOD_5 and TSS are based on current Utah Secondary Treatment Standards, *UAC R317-1-3.2*. The oil and grease is based on best professional judgment (BPJ). The waste load analysis indicates that these limitations should be sufficiently protective of water quality.

Whole effluent toxicity (WET) testing is based on established precedent and professional judgment.

The Spring Creek TMDL lists total phosphorus, dissolved oxygen, ammonia, temperature, and fecal coliforms as the pollutants of concern. The ammonia concentration limits are based on the waste load analysis and water quality standards. The phosphorus concentration limit is based on

the recommendations of the Spring Creek TMDL. The TMDL does not prescribe additional treatment from the Hyrum wastewater treatment plant for dissolved oxygen, temperature, and fecal coliforms.

Although Spring Creek is used in the waste load analysis as the receiving waters for the Hyrum discharge, the discharge actually outfalls to an irrigation ditch about 1.5 miles before the confluence with Spring Creek. The irrigation ditch is Class 4 (protected for agricultural uses including irrigation of crops and stock watering), which does not have a dissolved oxygen standard. By the time the discharge flows down the irrigation canal to Spring Creek, dissolved oxygen should be naturally equilibrated with the atmosphere. For that reason a dissolved oxygen limit is not included in the permit.

When the TMDL was written, fecal coliforms were used as the bacterial standard in Utah. Since then DWQ has changed the standard and now uses E-coli (see the first paragraph in this section). The bacterial limit in the permit, as already stated, is based on E-coli.

Water temperature control for streams is more commonly addressed through non-point sources mainly through the physical characteristics of the watershed, but also through control of point sources such as those that discharge cooling water. It is not common to control water temperature in the limits for a POTW. It would be unreasonable to require the discharge from a POTW to be refrigerated.

Through the pretreatment program (Part II of the permit) Hyrum is required to monitor metals quarterly in the treatment plant influent and effluent. Hyrum does not have any industrial users that would present a risk for metals. Limitations on metals are not included in the permit because of a lack of a reasonable potential.

The permit limitations are:

Parameter	Effluent Limitations[1]				
	Max Monthly Average	Max Weekly Average	Daily Min	Daily Max	Annual Max
Flow, mgd	2.0				
BOD_5, mg/L BOD_5 Min. % Removal	25 85	35 NA			
TSS, mg/L TSS Min. % Removal	25 85	35 NA			
Ammonia, mg/L Summer (July through Sept.) Fall (Oct. through Dec.) Winter (Jan. through March) Spring (April through June)	 5.0 4.9 4.1 4.3			 10.9 9.8 9.4 9.8	
Total Phosphorus, mg/L	0.1				140 (kg/yr)
E coli, No./100mL	126	158			

Parameter	Effluent Limitations[1]				
	Max Monthly Average	Max Weekly Average	Daily Min	Daily Max	Annual Max
Oil & Grease, mg/L				10	
pH, Standard Units			6.5	9.0	
WET, Acute Biomonitoring				LC50 > EOP	
WET, Chronic Biomonitoring				IC25 > 61.1% Effluent	

NA – Not Applicable.

SELF-MONITORING AND REPORTING REQUIREMENTS

The following self-monitoring requirements are the same as in the previous permit. The permit will require reports to be submitted monthly and quarterly, as applicable, on Discharge Monitoring Report (DMR) forms due 28 days after the end of the monitoring period. Lab sheets for biomonitoring must be attached to the biomonitoring DMR.

Self-Monitoring and Reporting Requirements[1]			
Parameter	Frequency	Sample Type	Units
Total Flow	Continuous	Recorder	MGD
BOD_5, Influent[2,4] Effluent	2 x Weekly 2 x Weekly	Composite Composite	mg/L mg/L
TSS, Influent[2,4] Effluent	2 x Weekly 2 x Weekly	Composite Composite	mg/L mg/L
Ammonia	2 x Weekly	Grab	mg/L
Phosphorus[3]	Monthly	Grab	mg/L
E-Coli	2 x Weekly	Grab	No./100mL
Oil & Grease	Monthly if sheen is observed	Grab	mg/L
pH	Weekly	Grab	SU
WET, Acute (alternating specie)	Quarterly	Composite	LC50 > EOP Effluent
WET, Chronic (alternating specie)	Quarterly	Composite	IC25> 61.1% Effluent
Metals[5], Influent Effluent	Quarterly Quarterly	Composite[6] Composite[6]	mg/L mg/L
Organic Toxics	Yearly	Grab	mg/L

1 See Definitions, *Part VIII*, for definition of terms.

2 Flow measurements of influent/effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.

[3] The permittee shall report concentration but shall also calculate and report loading in accumulated kilograms.

[4] In addition to monitoring the final discharge, influent samples shall be taken and analyzed for this constituent at the same frequency as required for this constituent in the discharge.

[5] The permittee must take samples and procure the approved EPA laboratory testing method to obtain the required minimum detection limit (see permit *Part II.H.1*.) for the following metals: arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, silver, and zinc. Although cyanide is not a metal it must be included in afore mentioned sampling and testing along with the previously listed metals.

[6] In the case of cyanide, sampling must be done as a grab.

BIOSOLIDS

DESCRIPTION OF BIOSOLIDS TREATMENT

After the influent is screened the solids are stabilized by the activated sludge process with a mean cell residence time of approximately 45 days. The biosolids are then de-watered with a belt press, and dried in concrete drying beds until the biosolids have met a process to significantly reduce pathogens, and have met a method of vector attraction reduction.

DESCRIPTION OF BIOSOLIDS DISPOSAL METHOD

Even though the biosolids produced by HWTP meet exceptional quality standards for heavy metals through testing, and the biosolids have met a process to **significantly** reduce pathogens, the biosolids **have not** met a process to **further** reduce pathogens. Therefore, the biosolids do not meet the pathogen reduction requirements for the biosolids to be considered Class A for sale or giveaway to the general public for home lawn and garden use.

However, since the biosolids have met a method of a "process to significantly reduce pathogens", and a method of vector attraction reduction, the biosolids **do** meet the requirements for Class B pathogen reduction standards and may be used for agriculture or land reclamation purposes.

In 2007 the Hyrum Wastewater Treatment Plant (HWTP) land applied 274 dry metric tons of Class B biosolids to city owned property for agriculture production. At this time the HWTP intends to dispose of their biosolids in this manner for the life of this permit.

SELF-MONITORING DATA

Heavy Metals Monitoring

The HWTP was required to sample once for heavy metals in 2007. The table below shows the HWTP was in compliance and met the exceptional quality standards for heavy metals. However, the limited monitoring data of the past shows the arsenic levels in the biosolids have been rising. If the arsenic levels exceed table 3 below, the biosolids will not qualify as exceptional quality, and further record keeping and land application requirements may change.

METALS MONITORING DATA, 2007

Parameter	Table 1 Limitations, mg/Kg	HWTP, Average mg/Kg (2007)	HWTP, Maximum, mg/Kg (2007)
Arsenic	41.0	39.0	39.0
Cadmium	39.0	<1.0	<1.0
Copper	1,500.0	192.0	192.0
Lead	300.0	12.0	12.0
Mercury	17.0	1.04	1.04
Molybdenum	75.0	4.0	4.0
Nickel	420.0	10.3	10.3
Selenium	36.0	<1.0	<1.0
Zinc	2,800.0	457.0	457.0

Vector Attraction Reduction Monitoring
The total solids content must be at least 75%. The HWTP's monitoring data show's the total solids content was 76.6%

Pathogen Reduction Monitoring
Because the HWTP used a process to significantly reduce pathogens, sampling for pathogens was not required, therefore there is no data.

LIMITATIONS AND SELF-MONITORING REQUIREMENTS
Under *40 CFR 503.16(a)(1),* the self-monitoring requirements are based upon the amount of biosolids disposed per year and shall be monitored according to the chart below.

Minimum Frequency of Monitoring	
Dry Metric Tons of Biosolids Disposed Per Year	Monitoring Frequency
> 0 to < 290	Once Per Year
> 290 to < 1,500	Four Times Per Year
> 1,500 to < 15,000	Six Times Per Year

Accordingly, the HWTP needs to monitor at least once per year.

CLASS B REQUIREMENTS (Heavy Metals)
The intent of the heavy metals regulations of Tables 1, 2 and 3, of *40 CFR 503.13* is to ensure that heavy metals do not build up in the soil at farms, forest land, and land reclamation sites to the point where the heavy metals become phytotoxic to plants. The permittee will be required to

produce an information sheet (see *Part III.D.11*. of the permit) to be handed out to all people who are receiving and land applying Class B biosolids to farms, ranches, and land reclamation sites. If the biosolids are land applied and meet the heavy metals limitations under *40 CFR 503.13*, the Class B biosolids will be able to be land applied year after year, to the same farms, ranches, and land reclamation sites without any deleterious effects to the environment due to heavy metals.

If the biosolids are to be land applied to agricultural land, forest land, a low public contact site or a reclamation site it must meet at all times:

The maximum heavy metals listed in Table 1 and the heavy metals loading rates in Table 2; or

The maximum heavy metals in Table 1 and the monthly heavy metals concentrations in Table 3.

If the biosolids do not meet these requirements they cannot be land applied.

Tables 1, 2, and 3 of Heavy Metal Limitations

Heavy Metals	Table 1	Table 2	Table 3
All heavy metals concentrations shall be measured and reported	Daily Maximum mg/Kg a/b/c/d/	Cumulative Loading Rate Kg/Ha a/	Monthly Average Concentration mg/Kg a/b/c/d/
Total Arsenic	75	41	41
Total Cadmium	85	39	39
Total Copper	4300	1500	1500
Total Lead	840	300	300
Total Mercury	57	17	17
Total Molybdenum	75	N/A	N/A
Total Nickel	420	420	420
Total Selenium	100	100	100
Total Zinc	7500	2800	2800

a/ See Part V. of the permit for definition of terms.

b/ The limitations represent the maximum allowable levels of heavy metals in any biosolids intended for land application.

c/ Any violation of these limitations shall be reported in accordance with the requirements of *Part III.G.1*. of the permit.

d/ These limitations represent the maximum allowable levels of heavy metals based on an average of all samples taken during a 30-day period.

CLASS B REQUIREMENTS (Pathogens)

Hyrum intends to achieve Class B biosolids in one of three different ways with regards to pathogens:

1. Under *40 CFR 503.32 (b)(2*) Hyrum may test the biosolids and it must meet a microbiological limit of less than 2,000,000 MPN of fecal coliform per gram for the biosolids to be considered Class B biosolids with respect to pathogens.

2. Under *40 CFR 503.32 (b)(3*), *Appendix B.2.* Hyrum must meet one of the processes to significantly reduce pathogens. Hyrum intends to meet a process to significantly reduce pathogens by using the air drying method of pathogen reduction. The biosolids are applied to an impervious surface and dried at a depth of no more than 9 inchs (23 cm) deep. The biosolids are allowed to dry for a minimum of 3 months. During 2 of the 3 months, the ambient average daily temperature is above 32^{o} F (0^{o} C)

3. Under *40 CFR 503.32 (b)(3*), *Appendix B.4*. Hyrum must meet one of the processes to significantly reduce pathogens. Hyrum intends to meet a process to significantly reduce pathogens by using the windrow method of composting. To achieve this, the temperature must be above 40^{o} C (104^{o} F) or higher, and remain at 40^{o} C or higher for a minimum of five days. For four hours, during the five days, the temperature needs to exceed 55^{o} C (131^{o} F).

Vector Attraction Reduction

If the biosolids are land applied Hyrum will be required to meet a method of vector attraction reduction under *40 CFR 503.33.* Hyrum intends to meet one of the vector attraction reduction requirements below.

1. Aerobic treatment of the biosolids for at least 14 days at over 40^{0}C (104^{0}F) with an average temperature of at least 45^{o}C (113^{o}F) *503.33(b)(5).*

2. Solids are equal to or greater than 75% total solids when primary solids are **not** present prior to land application *503.33(b)(7).*

3. Solids are equal to or greater than 90% total solids when primary solids are present prior to land application *503.33(b)(8).*

4. All Class B biosolids land applied shall be incorporated into the soil within 6 hours after land application *503.33(b)(10).*

Landfill Monitoring

Under *40 CFR 258*, the landfill monitoring requirements include a paint filter test. If the biosolids do not pass a paint filter test, the biosolids cannot be disposed in the sanitary landfill.

REPORTING AND RECORD KEEPING REQUIREMENTS

Record keeping

The record keeping requirements from *40 CFR 503.17* are included under *Part III.F*. of the permit. The amount of time the records need to be maintained are dependent on the quality of the biosolids in regards to the metals concentrations. If the biosolids continue to meet the metals limits of *Table 3 of 40 CFR 503.13*, and are sold or given away, the records need to be retained for a minimum of five years. If the biosolids are disposed in a landfill the records need to be retained for a minimum of five years.

Reporting

The HWTP needs to report annually as required in *40 CFR 503.18*. This report is to include the results of all monitoring performed in accordance with *Part III.C*. of the permit, information on management practices, biosolids treatment, and certifications. This report is due no later than February 19 of each year. Each report is for the previous calendar year.

STORM WATER

STORMWATER REQUIREMENTS

Storm water provisions are included in this permit.

The storm water requirements are based on the UPDES Multi-Sector General Permit for Storm Water Discharges for Industrial Activity, General Permit No. UTR000000 (MSGP). All sections of the MSGP that pertain to discharges from wastewater treatment plants have been included and sections which are redundant or do not pertain have been deleted.

The permit requires the preparation and implementation of a storm water pollution prevention plan for all areas within the confines of the plant. Elements of this plan are required to include: (1) the development of a pollution prevention team, (2) development of drainage maps and materials stockpiles, (3) an inventory of exposed materials, (4) spill reporting and response procedures, (5) a preventative maintenance program, (6) employee training, (7) certification that storm water discharges are not mixed with non-storm water discharges, (8) compliance site evaluations and potential pollutant source identification, and, (9) visual examinations of storm water discharges.

Hyrum City WWTP is currently covered under the UPDES Multi Sector General Permit for Industrial Activities.

PRETREATMENT REQUIREMENTS

The pretreatment requirements remain the same as in the current permit with the permittee administering an approved pretreatment program. Any substantial changes to the program must

be submitted for approval to the Division of Water Quality. Authority to require a pretreatment program is provided for in *19-5-108 UCA, 1953 ann.* and *UAC R317-8-8.*

The permittee will be required to perform an annual evaluation of the need to revise or develop technically based local limits to implement the general and specific prohibitions of *40 CFR, Part 403.5(a)* and *Part 403.5(b).* This evaluation may indicate that present local limits are sufficiently protective, or that they must be revised. As part of this evaluation, the permit requires quarterly influent and effluent monitoring for metals and organic toxics listed in *R317-8-7.5* and sludge monitoring for potential pollutants listed in *40 CFR 503.*

BIOMONITORING REQUIREMENTS

A nationwide effort to control toxic discharges where effluent toxicity is an existing or potential concern is regulated in accordance with the *State of Utah Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control (biomonitoring).* Authority to require effluent biomonitoring is provided in *Permit Conditions, UAC R317-8-4.2, Permit Provisions, UAC R317-8-5.3* and *Water Quality Standards, UAC R317-2-5* and *R317 -2-7.2*.

Since the permittee is a major municipal discharger, the renewal permit will require whole effluent toxicity (WET) testing. A review of the past three years of WET data indicates no toxicity has been reported. Therefore, the permittee will continue their quarterly WET testing procedures, including alternating acute and chronic testing, with alternating species as well, and no WET limit requirements. However, the permit will contain a toxicity limitation re-opener provision. This provision allows for modification of the permit to include WET limitations and/or increased WET monitoring, should additional information indicate the presence of toxicity in the discharge.

The permit will contain the standard requirements for accelerated testing upon failure of a WET test and a PTI (Preliminary Toxicity Investigation) and TRE (Toxicity Reduction Evaluation) as necessary.

PERMIT DURATION

The permit will be effective for five (5) years. This permit was drafted by Harry Campbell. Mark Schmitz, drafted the Biosolids Section.

Comments received? (to be addressed)

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Harry Campbell Date